

App. No. 10/762,449

Reply to Office action of December 14, 2004

Amendments to the Claims:

1 to 35. (canceled).

36. (currently amended) A program storage device readable by a machine tangibly embodying a program of instructions executable by the machine to perform method steps for improving layer side surfaces of structural layer areas ~~to be filled by layered manufacturing~~, the method steps comprising:

obtaining first curve data ~~representing~~ defining at least one layer area to be filled with a first material and to thereby create said structural layer, including said layer side surfaces; and

generating second curve data ~~representing~~ defining a second layer area to be filled with a second material, ~~such that said second layer area, when filled, having at least one side surface that has an overall convex shape and abuts at least a portion of said first structural layer area side surfaces over at least a portion of said first curve.~~

37. (previously presented) A program storage device as in claim 36, wherein said obtaining and generating steps are executed at least once for each of a plurality of stacked layers for which said layer side surface improving is desired.

38. (currently amended) A program storage device readable by a machine tangibly embodying a program of instructions executable by the machine to perform method steps for providing support, using first and second materials by layered manufacturing, underneath a material layer area[[s]] having an unsupported portion to be filled by layered manufacturing, the ~~layer areas including first material areas to be filled with a first material,~~ the method steps comprising:

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obtaining a first data set having a plurality of first layer data sets representing said layer area[[s]] to be filled with said first material by layered manufacturing, along with first support layer areas underneath said layer area, said first support layer areas to also be filled with said first material by layered manufacturing; and

generating a second data set having a plurality of second layer data sets representing second support layer areas underneath said unsupported portion of said layer area, said second support layer areas to be filled with said second material by layered manufacturing,

wherein said layer area and said first support layer areas, when filled with said first material, data sets define unsupported structures defining a void volume[[s]] underneath said unsupported portion of said layer area structures, wherein said second support layer areas, when filled with said second material, data sets define a support structure[[s]] inside said void volume, the support structure having a support structure volume and supporting said unsupported structure,

~~wherein said support structure volumes are~~ that is substantially less than said void volume[[s]].

39. (previously presented) A program storage device as in claim 38, wherein said generating step includes:

- (a) selecting a pair of layers having an upper layer and an immediately lower layer;
- (b) reducing the area of said pair upper area by an increment;
- (c) determining any portion of said upper layer unsupported by said lower layer;
- (d) creating a new support area for said pair lower layer;
- (e) adding said new support area to said lower layer; and

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(f) repeating steps (a) through (e) for a plurality of said layer pairs by setting said pair lower layer to be said pair upper layer in the next iteration.

40. (canceled).